

Applicant: Rein Tigane
Application No.: 10/511,635

REMARKS/ARGUMENTS

After the foregoing amendments, claims 1 – 5 are currently pending in this application. Claims 1 – 5 have been amended to conform to U.S. patent practice. Claim 1 has been further amended to replace "valve gear" with "valve assembly." Applicant contends that "assembly" is synonymous with "gear," yet the term "assembly" better corresponds to the meaning of the original Finnish text. Applicant submits that no new matter has been introduced into the application by these amendments.

Claim Rejections - 35 U.S.C. § 112

Claims 1 – 5 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite. The amendments to claims 1 and 5 obviate this rejection. Withdrawal of the § 112 rejection is respectfully requested.

Claim Rejections - 35 USC §102

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(b) as anticipated by German Patent No. DE 3616001 to Eder. Applicant respectfully traverses the rejection of these claims and respectfully submits that these claims are patentable over the art of record for at least the reasons set forth below.

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Independent claim 1, as amended, recites features that are neither disclosed nor suggested by Eder, namely:

External combustion engine, comprising a body, at least one working chamber, combustion chamber, crankcase and compression chamber, at least one working piston, compression piston and crank mechanism, and a valve equipment and a heat exchanger, wherein *the required air is drawn by suction via valves from the air surrounding the engine....*

As shown in the exemplary embodiment represented in Fig. 1 of the instant application, the external combustion engine is a *freely breathing* heat engine (see page 2, line 9, of the originally-filed specification). Outer air is drawn via a filter 1 and an opened valve 2 into a crankcase 21, where it is pre-compressed and drawn by suction via a valve 3 into a compression chamber 6, where it is compressed (page 2, lines 10 – 12).

In contrast, Eder neither discloses nor suggests an internal combustion engine that draws required air by suction from the air surrounding the engine. More specifically, Eder discloses a Stirling cycle engine with a closed hermetic cycle, i.e., a hermetically sealed crankcase (see Title portion of Derwent Translation). By definition, Stirling engines work by the repeated heating and cooling of a *sealed* amount of working gas, usually air or other gases such as hydrogen or helium. As represented in Fig. 1 of Eder, the engine includes a chamber 9 that must be cooled

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by a cooler 7 (see Abstract portion of Derwent Translation). In other words, because the engine of Eder is a closed (sealed) system that does not draw fresh air from outside the engine, it requires the use of the cooler 7. Accordingly, Eder neither discloses nor suggests an internal combustion engine that draws required air by suction from the air surrounding the engine.

It is because the external combustion engine of Applicant's invention draws required air by suction from the air surrounding the engine that the following advantages are achieved. As explained at page 1, lines 11 – 13 of the originally-filed specification, prior-art machines have the drawback that they are complicated, difficult to service, and they require a separate cooler. Applicant's invention achieves a freely breathing external combustion engine that has a simple construction and involves low maintenance costs (page 1, lines 15 – 17). No cooling is needed, as cold air is taken from outside the engine (page 1, lines 29 – 30).

Thus, because independent claim 1, as amended, recites features that are neither disclosed nor suggested by Eder, Applicant respectfully submits that claim 1 should be allowed. Applicant further respectfully submits that because claim 2 is dependent upon allowable claim 1, claim 2 should also be allowed at least as dependent upon an allowable base claim. Reconsideration of these claims is respectfully requested.

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Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned at the Examiner's convenience.

In view of the foregoing amendments and remarks, Applicant respectfully submits that the present application, including claims 1 – 5, is in condition for allowance and a Notice to that effect is respectfully requested.

Respectfully submitted,

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